

ABSTRACT

Development of a Chemical Profiling System of Volatile Flavour Components in Trinidad and Tobago Cocoa (*Theobroma cacao* L.)

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Trinidad and Tobago produces fine/flavour cocoa which possess unique flavour attributes. Fine/flavour cocoa represents approximately 5% of the global cocoa market and is in high demand for the manufacture of specialty chocolates. As more countries are being recognized as producers of fine/flavour cocoa, in order for Trinidad and Tobago to retain its market shares, it has become necessary that we monitor and maintain the quality of locally produced cocoa. One factor which influences the marketability of our cocoa is flavour. One way to maintain flavour quality is to identify flavour constituents through the generation of a standardized method of chemical flavour profiling. Volatile flavour constituents play an important role in defining the overall flavour of cocoa and cocoa products. Although several methods of extracting these flavour volatiles exist, the most common method adopted has been headspace extraction where volatiles in the atmosphere directly above the sample are extracted. Solid Phase Microextraction (SPME) is one such method. The suitability of five SPME fibres was explored: polydimethylsiloxane (PDMS), polyacrylate (PA), PDMS/divinylbenzene (DVB),

DVB/carboxen (CAR)/PDMS, CAR/PDMS. SPME was used to develop flavour profiles of Trinitario beans during fermentation, after drying and under a CO₂ storage environment. All extracted flavour volatiles were analysed by gas chromatography. Flavour profiles were compared with flavour assessments of cocoa liquors made from well fermented and dried beans. Results of this study indicated no clear correlation existed between chemical and sensory profiles.

Keywords: cocoa; flavour; SPME; gas chromatography; Trinidad; West Indies; Caribbean; *Theobroma cacao* L.